

In re Appln. of GRIDLEY et al.
Application No. 09/492,602

REMARKS

The undersigned would like to thank the Examiner for the telephonic interview conducted on December 18, 2002. In the interview, the references applied in the Office Action dated June 27, 2002, and proposed claim amendments were discussed. In order for the Office to fully consider the amendments and remarks made herein, this Response is being submitted concurrently with a Request for Continued Examination under 37 CFR § 1.114.

Applicants have carefully reviewed and considered the Office Action dated June 27, 2002, and the references cited therein. In response, applicants have amended claims 23, 24, 32, 40-48, 50, 54, 56, and 57. In addition, applicants have canceled, without prejudice, claims 28, 29, and 49. No new matter has been added by way of these amendments. Applicants believe that the application is now in condition for allowance. Accordingly, favorable reconsideration in light of the following remarks is respectfully requested.

It is noted that the Office Action considered a restriction requirement to be appropriate in light of new claims 35-39 and 51-53 being directed toward an independent invention having a unique and separate means for establishing patentability relative to the other pending claims. The Office Action constructively elected claims 23-34, 40-50, and 54-57 as being originally presented for prosecution on the merits. The newly submitted claims 35-39 and 51-53 were withdrawn from consideration as being directed to a non-elected invention.

Claims 23-29 and 40-49 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,096,008 to Taylor in view of U.S. Patent No. 5,942,059 to Wulker. The Office Action acknowledged that Taylor is silent with respect to dispensing cushion gum at a slower rate as compared to the peripheral speed of the tire casing and adjusting the tread length for tread matching.

Taylor is directed to a method for retreading tires wherein a precured tread component is bonded to a tire casing primarily by using the residual heat in the precured tread component. The residual heat of the tire tread in the bonding zone is used to cure the cushion gum and to provide a bond between the tread and the tire. In one method, the tread is conveyed directly from a molding apparatus to the tire casing. In another method, the tread strip is stored and subsequently reheated by a heating device before being applied to the tire casing.

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Wulker is directed toward a control apparatus and method for a coating device which utilizes a measurement system to determine whether a body supplied to the coating device is acceptable for coating and/or to establish template data in preparation for a coating operation. The Wulker control unit is mounted in one embodiment to a machine for retreading tires. The Wulker retreading machine performs a warm vulcanization retreading process. The Wulker machine 1 includes a unit 2 adapted to prepare rubber mass and which includes an extruder. Rollers 3 form the rubber mass into a strand 4 of rectangular cross-section. A coating unit 5 applies the rubber strand to a carcass 6. *See* Column 3, lines 22-28.

With respect to claim 23, applicants respectfully traverse the rejection. In response, applicants have amended claim 23. Neither reference teaches or suggests applying a length of cushion gum around the circumference of the tire casing with the cushion gum being dispensed at a linear velocity that is less than the tangential velocity of the periphery of the tire casing such that the cushion gum adheres to the tire casing as a result of stretching of the cushion gum being controlled during application as recited in amended claim 23.

Taylor states that "no adhesive per se is required, with the cushion stock, when heated, being 'tacky' in and of itself and serving as the bonding component between the tread strip and the tire carcass." Col. 3, lines 48-52. Similarly, Wulker applies a strand of rubber from an extruder to a carcass. Wulker does not disclose applying a layer of cushion gum between the tread and the tire casing. Neither reference teaches or appreciates controlling the stretching of the cushion gum during application to adhere the cushion gum to the tire casing.

Neither Taylor nor Wulker teach or suggest an adjusting step as claimed in amended claim 23. In Taylor, a lineal measurement device 15 is provided for recording "the precise circumferential dimensions of the carcass and electronically feed[ing] the data to a cutting device 16 which severs the tread strip to the precise length required to conform to the circumference of the tire." Column 3, lines 40-44. Taylor teaches away from adjusting the length of tire tread so that the first and second ends of the tire tread provide a substantially continuous tread design when brought together on the casing by stating that the tread length is cut at "the precise length" required to conform to the circumference of the tire. If the claimed adjusting step were appended to the Taylor method as propounded by the Office Action, the operability of such a resulting system for retreading tires is in question insofar as it is not at all clear how the modified Taylor system would compensate for any difference between the length of tread, adjusted for tread matching, and the circumference of the tire

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casing. The Wulker method makes no mention of a tread design imparted upon the rubber, stating that the machine 1 includes an assembly, comprising rollers 3, which forms the rubber mass into a strand 4 of rectangular cross-section. *See* col. 3, lines 24-26. After the body 6 is coated with rubber, the tire is vulcanized in a known manner to a finished end product. *See* col. 5, lines 48-49.

In addition, neither of the applied references teach or suggest controlling the pressure applied to the tire tread during application based on the circumferential distance of the casing and the cushion gum not covered by the tire tread and the length of tire tread not applied to the casing and the cushion gum.

Claim 24 was amended to further define the invention. Claim 32 was amended to remove language already appearing in claim 23 from which it depends.

Claims 24-27 and 30-34 depend from claim 23 and thus contain the same patentable features as claim 23.

With respect to claim 40, claim 40 has been amended to distinguish the cited references. Neither applied reference teaches or suggests a cementless cushion gum applicator adapted to stretch a length of cushion gum onto the tire casing such that the stretched cushion gum substantially adheres to the tire casing.

In addition, neither applied reference teaches or suggests a tread dispenser adapted to automatically dispense the length of tire tread based on the circumference of at least one of the tire casing and the tire casing plus the cushion gum.

Also, neither applied reference teaches or suggests a tread dispenser which includes a tread drive adapted to permit the location of the length of tire tread to be adjustable with respect to the tread cutter for cutting the tire tread to define a second end in such a manner that, once the cut tread is applied, the design pattern of the tire tread will appear substantially continuous. In fact, Taylor teaches away from adjusting the tire tread so that the tire tread design on each end matches at the point where the tread may be cut by disclosing that the tread length is cut at "the precise length" required to conform to the circumference of the tire.

Claims 41-48 depend from claim 40 and thus contain the same patentable features as claim 40.

Claim 44 has been amended to correct the preamble to correspond to claim 40 from which it depends.

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Claims 41-43 and 45-48 have been amended to redefine the respective invention without narrowing its scope. It is respectfully submitted that amended claims 41-43 and 45-48 serve to further define present structural attributes of the claimed apparatus for retreading tires. *See* MPEP 2173.05(G); *In re Venezia*, 530 F2d 956 (CCPA 1976).

Applicants understand the Office Action to assert that the language of claims 43 and 45-47 do not add patentable weight to the instant apparatus claims. Applicants respectfully disagree with this position and submit that newly amended claims 43 and 45-48, as well as claims 41, 42 and 48, are patentably distinct from the applied references. It is completely appropriate to define the apparatus for retreading tires at least in part by what it does. These claims should be evaluated and considered, just like any other claim, for what they fairly convey to a person of ordinary skill in the art in the context in which they are used. *See* MPEP 2173.05(g); *In re Venezia*, 530 F2d 956 (CCPA 1976); *see also, Pac Tech Inc. v. Amerace Corp.*, 14 U.S.P.Q.2d 1871, 1876 (Fed. Cir. 1990) (upholding district court's ruling that "adapted to" language could not be disregarded in assessing validity of the claim).

Claims 32 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Taylor in view of Wulker and in further view of German Patent 2105765 to Continental.

The discussion of Taylor and Wulker above in connection with amended claim 23 is incorporated herein.

Continental discloses a method for applying a tread strip onto a carcass of a tire molding wherein the length of the strip is initially less than the corresponding carcass circumference and the difference is made up by pressing the strip onto the carcass and supporting drum by a roll at variable pressure.

With respect to amended claim 32 and claim 34, applicants respectfully submit that there are substantial differences between the invention and the applied references. For example, Taylor does not teach or suggest monitoring the circumferential distance of the casing and the cushion gum not covered by the tire tread.

The Office Action asserts that the Continental reference is directed to a tread application method wherein a variable pressure is applied to the tread based on the length of tread not yet applied and *the angular rotation of the drum*. The Office Action does not point to anything in the reference that would explain how Continental does in fact, or would, extrapolate the circumferential distance of the particular tire casing placed on the drum not covered by the tire tread from the angular rotation of the drum. Further, the Office Action

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does not explain how the disclosure in Continental would lead one of ordinary skill in the art at the time of the instant invention to understand Continental to necessarily teach, or even suggest the desirability of, monitoring the circumference of the tire casing not covered by the tire tread by its "pressure controlling" step. Instead, it appears that the Office Action relies upon hindsight reconstruction to pick and choose among isolated disclosures in the applied references to attempt to arrive at the claimed invention.

Furthermore, the Office Action fails to point to any suggestion in the prior art to modify the Taylor reference to yield the method of amended claim 17. In fact, the two references approach tire tread application in noncomplementary fashions. Taylor states that "[a] necessity exists for a scored splice at the two ends of the tread strip." Column 3, lines 37-38. A lineal measurement device 15 is provided for recording "the precise circumferential dimensions of the carcass and electronically feed[ing] the data to a cutting device 16 which severs the tread strip to the *precise length* required to conform to the circumference of the tire," Column 3, lines 40-44 (emphasis added). Continental, on the other hand, is directed toward a method wherein a length of tread strip is provided that is initially *less than* the corresponding carcass circumference with the difference being made up by pressing the strip onto the carcass by a roll at variable pressure. There simply is no motivation to modify the Taylor reference in light of the "pressure controlling" step of the Continental reference because the two references reach different solutions for a similar problem. The Taylor and Continental references thus teach away from each other and do not support such a proposed modification.

Claims 50 and 54-57 stand rejected under 35 U.S.C. § 103 as being unpatentable over Taylor as applied to claim 40 and further in view of Continental. The above discussion of Taylor in connection with amended claim 40 and the above discussion of Continental in connection with amended claim 32 are incorporated herein. Applicants respectfully traverse the rejection. In response, claim 50 has been amended to further define the invention. Neither Taylor nor Continental teach or suggest a cushion gum applicator adapted to apply a length of unheated cushion gum onto the tire casing with the applicator dispensing the cushion gum at a rate which is less than the tangential velocity of the periphery of the tire casing to thereby stretch the cushion gum onto the tire casing.

Furthermore, the Office Action has not pointed to anything in either Taylor or Continental to show that these references teach or suggest a tread dispenser adapted to

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automatically dispense a length of tire tread based on the circumference of at least one of the tire casing and the tire casing plus the cushion gum.

In addition, the Office Action has not shown that either Taylor or Continental teach or suggest a variable force applicator adapted to apply the tread to the casing with a variably controlled force that is based on the circumferential distance of the casing and cushion gum not yet covered by the tire tread and the length of tire tread not yet applied to the casing and cushion gum.

Claims 54-57 depend from claim 50 and thus contain the same patentable features as claim 50.

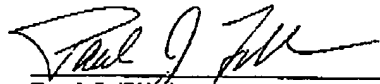
Claims 54 and 57 have been amended to redefine the respective invention without narrowing its scope. It is respectfully submitted that amended claims 54 and 57 serve to further define present structural attributes of the claimed apparatus for retreading tires. *See* MPEP 2173.05(G); *In re Venezia*, 530 F2d 956 (CCPA 1976). With respect to claim 56, claim 56 has been amended to redefine the invention without narrowing its scope. It is respectfully submitted that amended claim 56 defines a structural relationship between the cushion gum applicator and the tread dispenser and a structural feature of the hub, namely that it is adjustably laterally in the direction of the axis of rotation of the hub.

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Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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Date: December 27, 2002

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this RESPONSE TO OFFICE ACTION (along with any documents referred to as being attached or enclosed) is being transmitted to the United States Patent and Trademark Office, Attention: Examiner J. Fischer, Art Unit: 1733, After Final Facsimile Number: 703-872-9311, on the date indicated.

Date: 12-27-02 Debra L. Hise

RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 1733

PATENT
Attorney Docket No. 305336

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

GRIDLEY et al.

Application No. 09/492,602

Art Unit: 1733

Filed: January 27, 2000

Examiner: J. Fischer

For: METHOD AND APPARATUS FOR
RETREADING TIRES

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GROUP 1700

AMENDMENTS TO CLAIMS
MADE IN RESPONSE TO OFFICE ACTION DATED JUNE 27, 2002

Amendments to existing claims:

23. (Twice Amended) A method of retreading tires, comprising:
- mounting a tire casing on a hub, the hub being rotatable;
 - applying a length of cushion gum around the circumference of the tire casing, said cushion gum being dispensed at a linear velocity that is less than the tangential velocity of the periphery of said tire casing such that the cushion gum adheres to said tire casing as a result of stretching of the length of cushion gum being controlled during application;
 - measuring, automatically, the circumference of the tire casing;
 - dispensing, automatically, a length of tire tread based on the measured circumference of the tire casing, the length of tread having a first end;
 - adjusting the length of said tire tread so that, after being cut, the first end and a second ends of the tire tread will provide a substantially continuous tread design when brought together on the casing;
 - cutting said length of tire tread to define the second end; ~~and~~
 - applying the cut length of tire tread to the tire casing; and
 - controlling the pressure applied to the tire tread during application, the pressure applied to the tread based on the circumferential distance of the casing

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and the cushion gum not covered by the tire tread and the length of tire tread not applied to the casing and the cushion gum;

wherein the cushion gum applying, measuring, dispensing, ~~providing~~ adjusting, cutting, and tire tread applying, and controlling are performed on an integrated machine,

24. (Amended) The method of claim 23, ~~further comprising: wherein the~~ measuring step includes measuring the circumference of the tire casing before the cushion gum is applied to the tire casing and after the cushion gum is applied to the tire casing.

32. (Amended) The method of claim 23 further comprising:

monitoring the circumferential distance of the casing and the cushion gum not covered by the tire tread; and

monitoring the length of tire tread not applied to the casing and the cushion gum; ~~and~~

~~controlling the pressure applied to the tire tread during application, the pressure applied to the tread based on the circumferential distance of the casing and the cushion gum not covered by the tire tread and the length of tire tread not applied to the casing and the cushion gum.~~

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40. (Amended) An apparatus for retreading tires, comprising:
a rotatable hub for mounting a tire casing, the tire casing having a periphery;
a drive adapted to rotate the hub and casing combination to develop a
tangential velocity at the periphery of the casing;
a cementless cushion gum applicator-~~configured~~ adapted to stretch a length of
cushion gum onto the tire casing, the stretch being controlled during application
relative to the tangential velocity of the periphery of the tire casing such that the
stretched cushion gum substantially adheres to the tire casing;
a tread cutter for cutting a length of tire tread, the length of tire tread having a
first end;
a tread dispenser-~~configured~~ adapted to automatically dispense a the length of
tire tread based on the circumference of at least one of the tire casing and the tire
casing plus the cushion gum, said tread dispenser includes a tread drive adapted to
permitting-permitsaid tread to be cut the location of the length of tire tread to be
adjustable with respect to the tread cutter for cutting the tire tread to define a second
end in such a manner that, once the cut tread is applied, the design pattern of the tire
tread will appear substantially continuous; and
a tread applicator-~~configured~~ adapted to apply the length of tire tread onto the
cushion gum;
wherein the cushion gum applicator, the tread dispenser, the tread cutter, and
the tread applicator are integrated into a single machine.
41. (Amended) The apparatus of claim 40 further comprising:
a measuring device-~~configured~~ adapted to measure the circumference of the
tire casing.
42. (Amended) The apparatus of claim 40 further comprising:
a measuring device-~~configured~~ adapted to measure the circumference of at
least one of the circumference of the tire casing and the circumference of the tire
casing plus the cushion gum.

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43. (Amended) ~~The cushion gum application system apparatus~~ of claim 40 further comprising:

wherein the drive configured is adapted to rotate the hub and casing combination at an angular rate based on the circumference of the tire casing.

44. (Amended) ~~The cushion gum application system apparatus~~ of claim 40 further comprising:

a rotatable spindle for mounting a roll of cushion gum thereon and dispensing a length of cushion gum therefrom.

45. (Amended) ~~The cushion gum application system apparatus~~ of claim 44 further comprising:

wherein the drive configured is adapted to rotate the hub and casing combination at an angular rate based on the circumference of the tire casing, wherein the drive is ~~configured~~ adapted to rotate the hub and casing combination at a first angular rate, the spindle at a second angular rate, and wherein the second angular rate is based on the first angular rate.

46. (Amended) ~~The cushion gum application system apparatus~~ of claim 45 wherein the drive is ~~configured~~ adapted to rotate the hub and casing combination such that a point on the perimeter of the tire casing has a first tangential velocity, a point on the perimeter of the roll has a second tangential velocity, and wherein the first tangential velocity minus the second tangential velocity provide a nonnegative differential velocity.

47. (Amended) ~~The cushion gum application system apparatus~~ of claim 46 wherein the drive is ~~configured~~ adapted such that the differential velocity is substantially constant during application of the cushion gum.

48. (Amended) ~~The cushion gum application system apparatus~~ of claim 40 further comprising:

a set of stitching rollers ~~configured~~ adapted to engage the cushion gum and provide pressure on the cushion gum as the tire casing is rotated, thereby providing enhanced adhesion of the cushion gum to the tire casing.

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50. (Amended) An apparatus for retreading tires, comprising:
a rotatable hub for mounting a tire casing, the tire casing having a circumference periphery;
a cushion gum applicator-~~configured~~ adapted to apply a length of unheated cushion gum onto the tire casing, wherein said applicator dispenses said cushion gum at a rate which is less than the tangential velocity of the periphery of said tire casing to thereby stretch said cushion gum onto said tire casing;
a tread dispenser-~~configured~~ adapted to automatically dispense a length of tire tread based on the circumference of at least one of the tire casing and the tire casing plus the cushion gum, ~~the tread dispenser including:~~
a tread cutter for cutting the tread to define the length of tread such that the length of tread has a first end and a second end;
a track-~~configured~~ adapted to receive the length of tread from the tread dispenser and to provide the length of tire tread to the casing; and
a variable force tread applicator-~~configured~~ adapted to apply the length of tire tread onto the casing with the cushion gum disposed therebetween, wherein the variable force applicator is-~~configured~~ adapted to apply the tread to the casing with a variably controlled force that is based on the circumferential distance of the casing and cushion gum not yet covered by the tire tread and the length of tire tread not yet applied to the casing and cushion gum;
wherein the cushion gum applicator, the tread dispenser, the track, and the variable force tread applicator are integrated into a single machine.

54. (Amended) The apparatus of claim 50 wherein the variable force tread applicator is-~~configured~~ adapted to stretch the tire tread onto the casing such that when the tire tread has been applied to the casing, the first end and the second end define a gap therebetween, the gap being within a predetermined range of distances.

56. (Amended) The apparatus of claim 50 wherein the cushion gum applicator and the tread dispense are disposed such that the cushion gum and the tire tread are substantially aligned, and the hub is adjustable laterally in the direction of the axis of rotation of the hub to align the casing with the cushion gum and the tire tread.

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57. (Amended) The apparatus of claim 50 further comprising:
a measuring device, the measuring device ~~configured~~ adapted to measure at
least one of the circumference of the tire casing and the circumference of the tire
casing plus cushion gum.